CLAIMS

We claim:

1. A method for providing a patient with an interferon α polypeptide comprising: introducing into a tissue of interest of the patient a recombinant vector comprising a nucleic acid segment encoding an interferon α polypeptide, the nucleic acid segment being operatively linked to a promoter having specificity for the tissue of interest, wherein the interferon α polypeptide is expressed in the tissue of interest in the patient.

2. The method of claim 1, wherein the interferon α polypeptide is interferon α2b.

3. The method of claim 2, wherein the promoter having specificity for the tissue of interest is a liver-specific promoter.

4. The method of claim 2, wherein the tissue comprises a liver cancer cell.

5. The method of claim 4 wherein the wherein the promoter having specificity for the tissue of interest is the AFP promoter.

6. The method of claim 5 wherein the vector is a viral vector.

7. The method of claim 6 wherein the vector is an adenoviral vector.

8. The method of claim 7 wherein the adenoviral vector is replication deficient

9. The method of claim 7 wherein the adenoviral vector is replication competent.

10. The method of claim 2 wherein the vector is a plasmid vector.

11. The method of claim 10 wherein the promoter is a liver specific promoter.

12. The method of claim 10 wherein the promoter having specificity for the tissue of interest is the AFP promoter.

13. A method for increasing interferon α levels in a tissue of interest in a patient comprising introducing into the tissue of interest a vector comprising a nucleic acid segment encoding an interferon α polypeptide, the nucleic acid segment being operatively linked to a promoter having specificity for the tissue of interest, wherein the interferon α polypeptide is expressed in the tissue of interest in the patient.

14. The method of claim 13 wherein the wherein the nucleic acid segment encoding an interferon α polypeptide is operatively linked to nucleic acid encoding an interferon α secretion leader.

15. The method of claim 14, wherein the interferon α is interferon α 2b.

16. The method of claim 15, wherein the vector is an adenovirus vector.

17. The method of claim 16, wherein the promoter is a liver-specific promoter.

~~18. The method of claim 17, wherein the tissue comprises cells *in vivo*.~~

19. A recombinant vector comprising a nucleic acid segment encoding an interferon α polypeptide, the nucleic acid segment being operatively linked to a promoter specific for a tissue of interest, wherein the nucleic acid segment encoding the interferon-α polypeptide lacks a secretion leader sequence.

20. The vector of claim 19, wherein the interferon-α polypeptide is interferon-α2b.

21. The vector of claim 19, wherein the interferon-α polypeptide is interferon-α2α1.

22. The vector of claim 19, wherein the interferon-α polypeptide is a consensus interferon-α polypeptide.

23. The vector of claim 20, wherein the promoter is a liver specific promoter.

24. The vector of claim 20, wherein the promoter is the AFP promoter.

25. The vector of claim 24 wherein the vector is an adenoviral vector.

26. The vector of claim 25 wherein the adenoviral vector is replication deficient.

27. The vector of claim 26 which is rAdNSIα2b.

28. The vector of claim 25 wherein the adenoviral vector is replication competent.

29. The vector of claim 28 wherein the endogenous adenoviral E1 promoter is replaced with the AFP promoter.

30. A pharmaceutical formulation comprising a recombinant vector comprising a nucleic acid segment encoding an interferon-α polypeptide, the nucleic acid segment being operatively linked to a promoter specific for a tissue of interest, wherein the nucleic acid segment encoding the interferon-α polypeptide lacks a secretion leader sequence.

31. The formulation of claim 30 wherein the interferon-α polypeptide is interferon-α2b.

32. The formulation of claim 31 wherein the vector is an adenoviral vector.

33. The formulation of claim 32 further comprising a delivery enhancing agent.

34. A method of treating hepatocellular carcinoma in a mammalian subject suffering therefrom by the administration of pharmaceutical formulation comprising a recombinant vector comprising a nucleic acid segment encoding an interferon-α polypeptide, the nucleic acid segment being operatively linked to a promoter specific for a tissue of interest, wherein the nucleic acid segment encoding the interferon-α polypeptide lacks a secretion leader sequence.

35. The method of claim 34 wherein the pharmaceutical formulation is administered via the intrahepatic artery.

36. The method of claim 35 wherein the mammalian subject is a human being and the interferon-α polypeptide is human interferon-α2b.

37. The method of claim 36 wherein the vector is a recombinant adenoviral vector.

38. The method of claim 37 wherein the adenoviral vector is replication deficient.

39. The method of claim 38 wherein the adenoviral vector is rAdNSIα2b.